

# **Haier SERVICE MANUAL**

Order No.TL0812S001V0

## **Automatic Washing Machine**

**Model No.HLP21N**



### **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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**Haier Group**

# Chapter 1: General Information

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## 1-2. General Guidelines

When servicing, observe the original lead dress. If a short circuit is found, replace all parts which are overheated or damaged by the short circuit. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed. Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the service places serviced or not. And be sure safety of that.

## 1-3. Caution and Warning symbols

(You will see them in "Matters needing attention")



Any instructions in this service manual with this "Warning" sign must be followed strictly.



To prevent damage to the washing machine, any instructions in this manual with this "Stop" sign must be followed strictly.

## 1-4. Function indication symbols

(You will see them in the specification table)

Signify the washing machine has this function.

Signify the washing machine doesn't have this function.

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## Chapter2 Product Features

### 2-1. Features

- **New "smiling face" appearance:** The appearance of this washing machine is novel. It looks like a smiling face , bringing you good feeling.
- **Transparent view window, new appearance:**It adopts transparent view window on the top lid. Therefore the user can see the washing directly without having to open the top lid. It is more convenient to use.
- **Heavy:** It has special "HEAVY" function applicable for very dirty laundries.
- **Washboard type stainless steel inner tub:** The stainless steel inner tub of this washing machine is washboard type. It can kneed laundries adequately and wash cleaner,reducing abrasion at the same time.
- **Smaller volume,larger capacity:** It adopts limited design to make good use of room,smaller volume and larger capacity.
- **Music buzzer:** Adopt the nationally initial music buzzer. The former boring buzzer is replaced by the nice music, bringing you more interesting life.
- **Automatic power-off function:** If the washing machine is not started after the power is switched on, or the washing is finished, the power will be switched off automatically for the sake of safety.
- **Alarm against breakdown:** the washing machine will alarm with abnormal display and buzzer when the drain hose is not put down, or when top lid is open, or the automatic program can not be performed.
- **Imbalance-revising function:** during spinning, if the laundries are slanting and bumping the tub, the washing machine will add one rinse automatically to revise the imbalance.

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## 2-2. SPECIFICATIONS

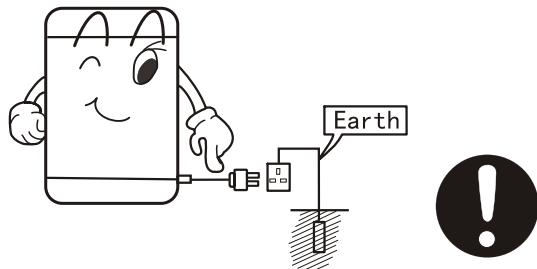
Model	Units	HLP21N
Free standing		✓
Built under		✗
Features for use		
Wash capacity	Cu.Ft.	1
Spin capacity	Cu.Ft.	1
Level/ Volume	L	Large33L / Medium22L / Low14L
Preset	H	✗
Control model		
controller		✗
Normal computerized		✓
Fuzzy computerized		✗
Frequency conversion		✗
Service features		
Programs		3
Short cycle		✓
Inlet heating select		✗
Heating selection		✗
Spinning cycle (selector)		✗
Spinning cycle (variable)		✗
Start/ Pause		✓
Automatic balancing		✓
Cabinet material (P=Plastic/ Z=Zincking / C=Cold rolled stainless steel )		Z
Inner drum (stainless steel =s / plastic=p)		S
Drain type		drain UP
Door (glass=g / plastic=p)		P
Adjustable feet		✓
Technical data		
Voltage/ frequency	V/ Hz	120V/ 60Hz
Water consumption	L	95
Wash power	W	220
Spin power	W	200
calefaction power		✗
Special function		
Air- Bubble		✗
Feet wheel		✓
Spray current		✗
Dimensions ( measurements)		
Height / built under	mm	760
Width	mm	447
Depth / with open door	mm	438
Dimensions packed ( measurements packed)		
Height	mm	825
Width	mm	510
Depth	mm	510
Net weight	kg	19.5
Gross weight	kg	23.5
20'Container load	Sets	88
40'Container load	Sets	184
40H'Container load	Sets	296

NOTE: " ✓ " FOR AVAILABLE, " ✗ " FOR NOT AVAILABLE " - "FOR NOT AVAILABLE

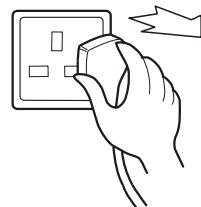
## Chapter3 Safety precautions

### 3-1. Safety

Be sure to use three-phase power receptacle. Ensure that the earth terminal of the power receptacle is earthed reliably.



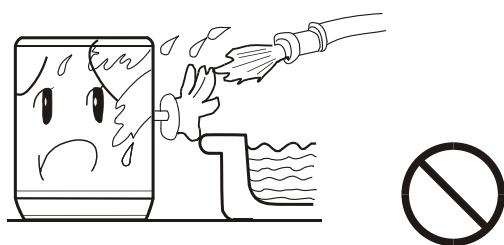
Be sure to pull the plug off when the machine is idle or when cleaning the machine.



If the power line is bad, to avoid risk it is required to have it replaced by the technicians of our special shop or our agent or the after-sale service department. Keep the pin of the power plug clean.



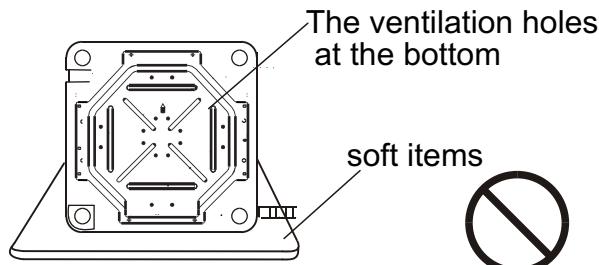
Do not put the machine at damp place like the bathroom. Never wash it with water.



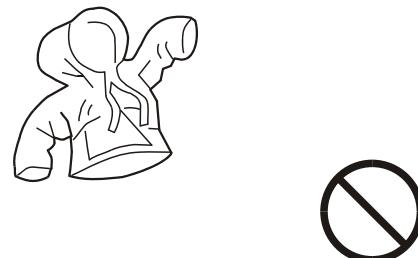
Do not use water hotter than 50°C.



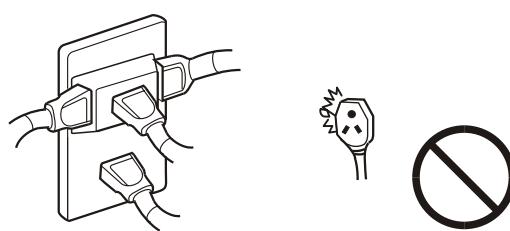
In case the washing machine is installed on ground with carpet, do not block the ventilation hole with carpet.



Do not wash water-proof laundries like the raincoat, bike covers etc. to avoid abnormal vibrations in spinning.



Do not let the machine share one receptacle with other electric appliances. If the power plug is damaged, or the plugging into the receptacle is loose, do not use the plug any more.

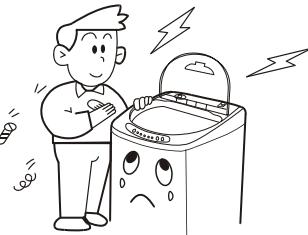


## 3-2.Warning and cautions

Do not stretch hands into the working machine. It is dangerous even if the rotation is slow. Take special care of the children.



Do not decompose, repair or alter the machine by yourself.



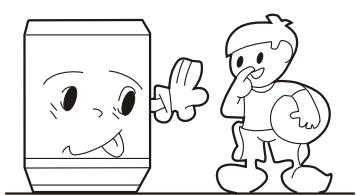
Do not put any hot or heavy items (such as the kettle with hot water) on the washing machine.



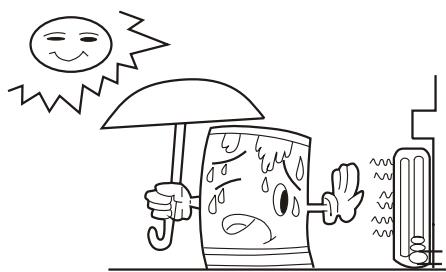
Do not wash laundries with volatile materials (such as thinner, petrol etc.)



The handicapped or children without care shall not use the machine.



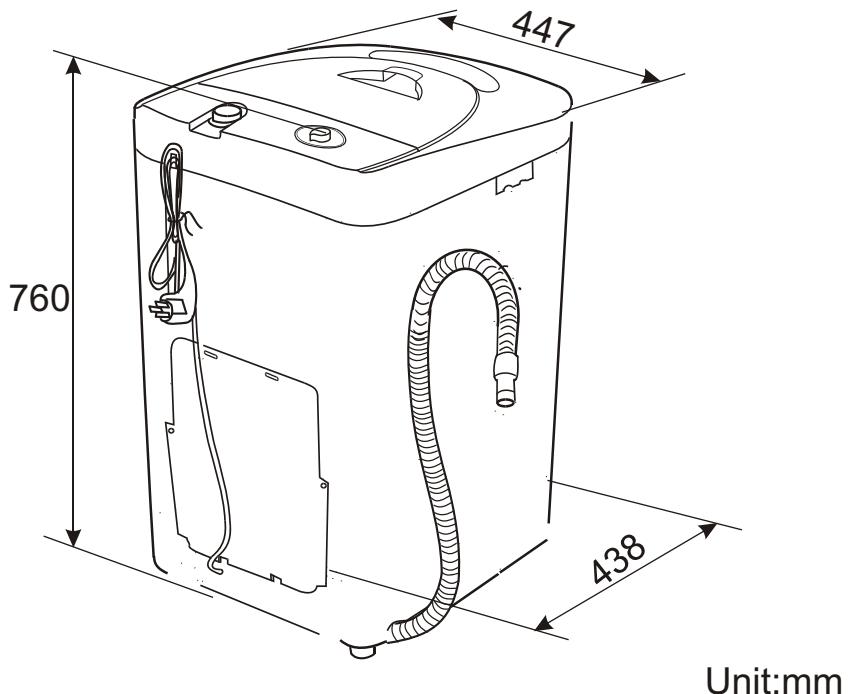
Keep the machine away from direct sunlight and heat source like the heater.



Please keep the lint filter in good condition, and install it to proper position. If the lint filter is lost or damaged, please contact the local after-sales service department of our company.



### 3-3.Net dimension



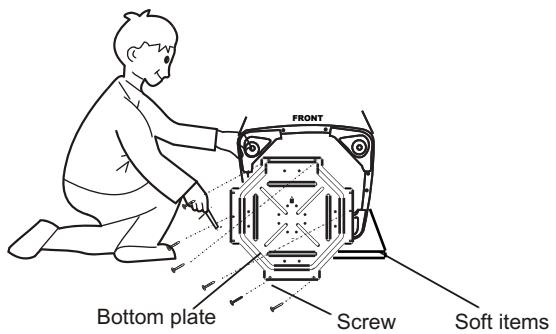
## Chapter4 Installation and accessory parts

### 4-1.Key points in installation

Please install and adjust the washing machine according to the requirement of this manual. It is important for your safe and proper using the machine.

### 4-2 Install the button plate

After open the package, please lean the washing machine gently down to soft items (towel cloth, blanket, etc.). Install the bottom plate to the bottom of the machine with the eight screws by a cross screwdriver, then lift the machine up gently.  
See to the figure.

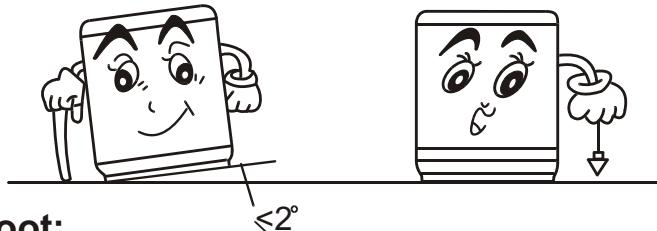


## 4-3 Adjustment of the installation position

The largest allowed slope of the shank base of the machine is  $2^\circ$ . Slanting or rough ground will result in unstable running or stoppage

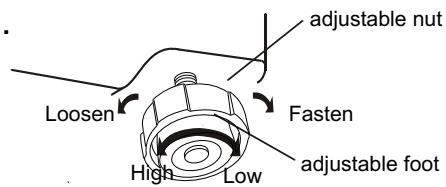
- Confirm it's horizontal:

Hang up the lead line to confirm it is horizontal.



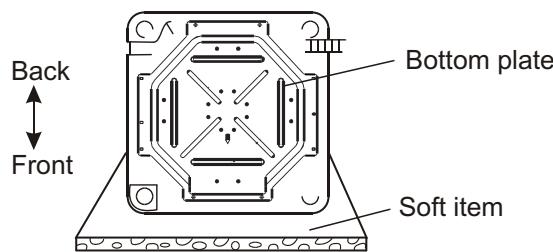
- Adjust the adjustable foot:

- 1) Please lift the foot side slightly in adjusting the foots. Loosen the adjustable nut, and twist the foot.
- 2) Fasten the nut after adjustment.

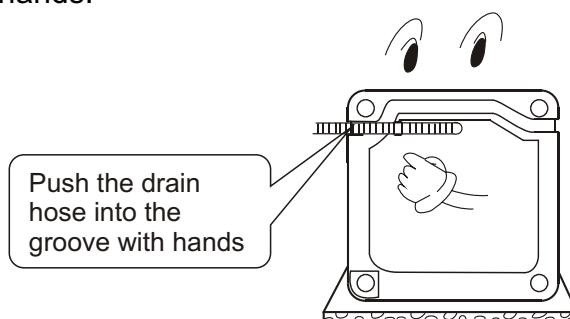


## 4-4 How to change the direction of the drain hose

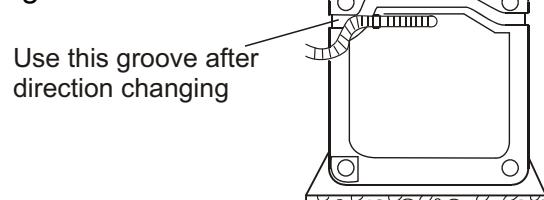
- 1.Lean the machine down gently with the front surface facing the ground. Loosen the eight screws by a cross screwdriver. Take off the bottom plate



- 3.Extend the drain hose from the left side. Push the drain hose into the groove with hands.



- 2.Pull out the drain hose from the right side groove.

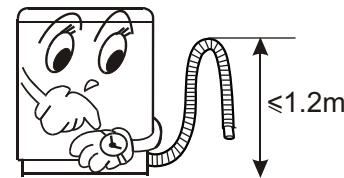


- 4.Install the bottom plate (method as stated in p6), then lift the machine up gently.

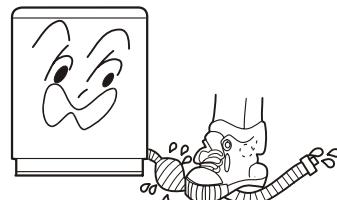
## 4-5 Usage of the drain hose

The drainage shall be smooth with the drain hose.

- 1.put the drain hose up to suitable position.



- 2.Do not step on or press the drain hose.



1. Insert a new flat washer into each end of the inlet hoses. Firmly seat the washers in the coupling. ( As figure 1)

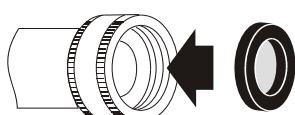


Figure 1

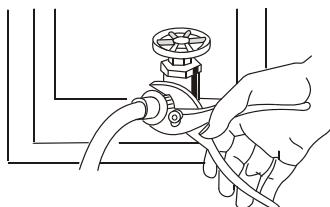


Figure 2

2. Respectively attach the water inlet hoses to the water faucet . Using pliers,tighten the coupling . ( As figure 2)

**NOTE:** Do not overtighten. Damage to the valves can result.

3. Run water through the faucets and inlet hoses, into a bucket or laundry tub, to get rid of particles in the water lines that might clog the inlet valves screens.

4. Attach the hose connected with the water faucet to the water valve. ( As figure 3)

**NOTE:** Do not overtighten. Damage to the valves can result.

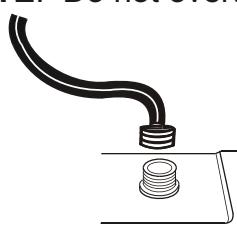


Figure 3

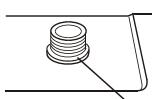


Figure 4

Water absorption cushion

5. Check for leaks

(1). Swing the water inlet hose gently to confirm if it's suitable.

(2). Turn on the water faucets and check for leaks. A small amount of water might enter the washers. You will drain this later.

Do not take off the water absorption cushion. Please check if the cushion is dropped or damaged before each usage. If it happens please contact our after-sale department immediately. (As Figure 4)

## 4-6 USAGE OF THE WATER LEVEL BUTTON



### "Water level"button

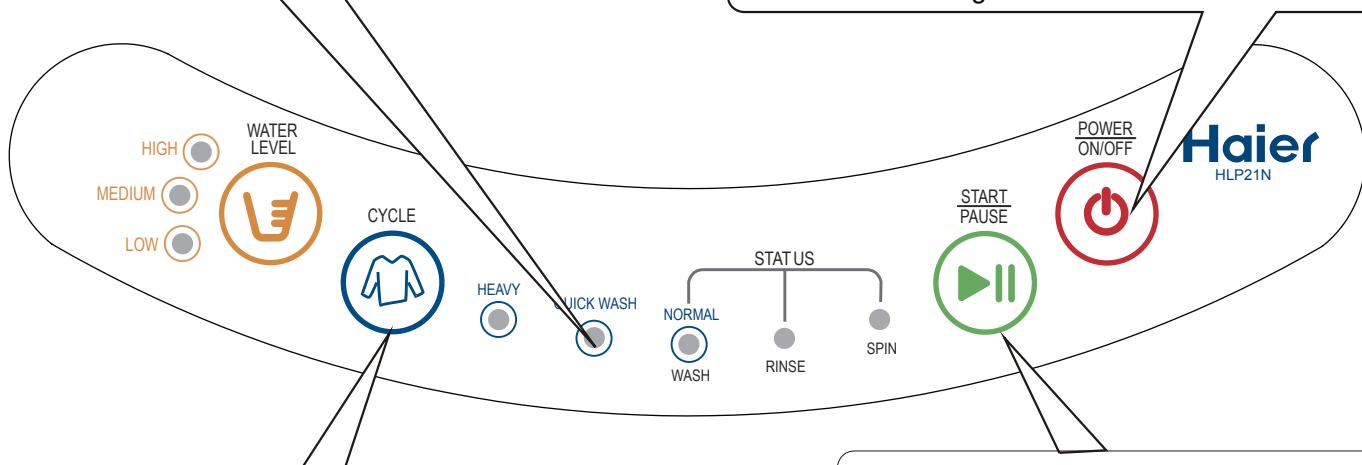
- Select suitable water level among three water levels of "High" "Medium" "Low" according to the quantity of the laundries
- After water inlet as per the preset water level, if more water is needed, please press the button to needed water level.

### Indicator mode and meaning

- The indicator is off, indicating that the program or mode is not selected.
- The indicator is flashing, indicating the running program.
- The indicator is on, indicating the program or mode selected and about to run.
- The indicator is flashing rapidly, indicating abnormal phenomenon.

### "Power on/off" button

- Push the button once to switch on/off the power.
- When the power is switched on, the "NORMAL" indicator is on.
- To switch on the power again after the power is switched off, please wait for at least 3 second before switch the power on.
- The power will be switched off automatically after the washing is finished.



### "CYCLE" button

- Push this button to select one or more programs from the five procedures: heavy wash,quick wash,wash, rinse, spin.
- If you push the "CYCLE" button for 7 times, it will resume.

Times of pushing the "CYCLE" button	Contents (the lighted indicators indicate the programs about to run)	Selected procedure program
Switch on the power	Quick wash Heavy Wash rinse spin	Wash, rinse, spin (Normal program)
1	Quick wash Heavy Wash rinse spin	Heavy wash, rinse, spin
2	Quick wash Heavy Wash rinse spin	Quick wash, rinse, spin
3	Quick wash Heavy Wash rinse spin	Wash only
4	Quick wash Heavy Wash rinse spin	Wash and rinse only
5	Quick wash Heavy Wash rinse spin	Rinse and spin only
6	Quick wash Heavy Wash rinse spin	Spin only

### "Start/Pause" button

- Push this button to perform automatic "NORMAL" program when the machine is started.
  - To start operating, push this button.
  - In operating, push the button to pause the operating. Push it again to resume operating.
- Remarks: in pausing, the flashing

#### Remarks:

- Once the "Start/Pause" button is pushed, you can only select midway during "HEAVY" and "wash" procedure; if you need to select at midway during procedures other than "HEAVY" and "wash", you have to switch off the power for more than 3 second before switch on the power again and make new selection.
- (Drain) The draining can only be performed according to the stipulated time when there's water in the tub. If there's no water in the tub, it will only perform 10 second draining action, then enter next step.

#### Description:

- Push the "powerswitch" button to switch on the power. If the "start/pause" button is not pushed in 10 minutes, the washing machine will switch off the power automatically.
- In using, first push the "powerswitch" button, then push the "CYCLE" button to select program. After selection, push the "Start/Pause" button to start washing.

## 4-7 Products Briefs

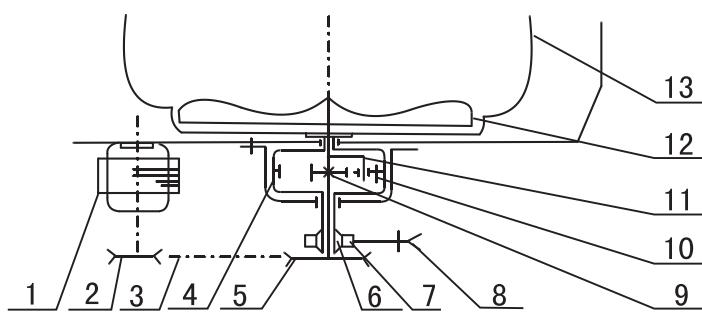
### 1)Computer sequencer

It adopts pouring seal with polyurethane on the surface. The light-emitting diode is sealed with insulation bushing to avoid humidity. To avoid splashing, the surface of computer plate and box and the operation components of the control panel seat are coated with control panel film.

### 2)Structure of the top lid

The top lid adopts transparent view window structure. If the top lid is closed, you can observe the running of the washing machine through the transparent lid.

### 3)Power transmission system



During washing, the rotation of Motor 1 is transferred to Follower 5 from Drive Wheel 2 through Belt 3. Meanwhile, Ratchet 7 will be braked by Pawl 8 through the action force of the spring, and the movement will be transferred to Center Gear 9, and then be retarded and transferred to Tie-rod 10 through a planetary gear mechanism consisting of Center Gear 9, Planet Gear 10 and Spin Shaft 4 (inner gear), then Tie-rod 10 is connected to Pulsator 12 via a spline shaft. Therefore, Pulsator 12 will move along with the clockwise and counterclockwise rotation of the Motor 1.

During spinning, the rotation of Motor 1 is transferred to Follower 5 from Drive Wheel 2 through Belt 3. Meanwhile, Pawl 8 will leave Ratchet 7 by the action of the puller. Clutch Reed 6 is twisted tightly on the down part of Spin Shaft 4. The Spin tub 13 is connected to Spin shaft 4 with flange. The movement of Motor 1 will be retarded by V-belt, and then transferred to Spin shaft 4 and make the Spin tub 13 to spin.

### 4)Damping system

Please pay attention in installation of the hangers that the spring of the hanger at the motor side (two) is different from those installed on the other hangers (two).

## 5) Operating Principle of the Hand-wash Type Washing Machine

The most obvious feature of this machine is that during washing, the pulsator and inner tub rotate to opposite direction, and thus make double washing effect. It is realized as following three points:

### **1.Retrader**

The retarder of this washing machine is different from former ones. It adopts dual ratchet and dual pawl structure. The brake arm has two action steps: the first step is applicable for washing mode: the brake belt is opened to make the brake wheel free. But the pawl does not leave the ratchet. The clutch spring keeps loose; the second step is applicable for spinning. The pawl leaves the ratchet. The clutch spring integrates the input shaft and clutch shaft and performs the spinning with the drive of motor.

### **2.Drain motor**

There are two strokes of the drain motor: the first stroke is used in washing. The second stroke is used in spinning.

### **3.Drain valve components**

Comparing with the former drain valve, this machine adopts dual valve pipe as the substitution of the former single valve pipe, which can guarantee that during washing the pulsator and the inner tub rotate to opposite directions, and thus make hand-wash type washing. In spinning,

## 4-8 Key points in disassembly

### 4-8-1 Points of attention in maintenance

#### 1)General attention

- Be sure to pull off the power plug in disassembly or maintenance
- Use stipulated crimp terminals in connecting the wires between the conducting wires as far as possible, and fix with suitable tools, and insulate with insulation tape completely.
- In inserting the conducting wires, be sure to plug the pins to the root and make it hard to be pulled out.
- If welding is needed, be careful not to touch the plastic or other insulation parts with the iron.
- When connecting the wires, be sure not to make the wire touch the mobile parts like the belt, radiating pulley and jib etc., and the sharp protruding parts and the parts with high temperature (motor). Connect
- and fix the wires as per their original mode.  
If there's metal object at the wire fixing point, be sure to insulate with insulation materials.  
Retain the dismantled screws for future usage in installation.

#### 2)Points of attention in usage of electric components

- In case that the power is on, the earthing circuit of the computer sequencer can have 120V voltage to earth. Take care not to get electric shock.  
Store the computer sequencer and driver under 4°C-30°C. Avoid direct sunlight.  
In trouble-shooting, it may require hot-line work. Please be extremely

## The part of control panel seat

### 1)Method of opening the control panel

- A.Open the back cover. Loosen the three locking belt fixed on the cabinet (used in inner wiring), to loosen the inner wiring.
- B.Loosen the four screws used to install the control panel seat (rear and side).  
Lift the rear upwards. Loosen the control panel seat from the inlay of

#### Attention:

- Do not lift the control panel seat by force, otherwise the safety switch control rod may get transformed, and the jointer part of the connecting pipe of the water level sensor may be loosened, therefore influence the normal operation of the microswitch and water level sensor.
- After opening the control panel seat, hold it with one hand or lean it on supporter like the wall. Do not put it down.

## 4-8-2 Points of attention in assembly

- Fix the wiring in the control panel seat to its original position. Do not make it touch sharp corner and mobile position. The space surrounding the computer sequencer is rather narrow. Please dispose it carefully and do not make the transformer press the wires.
- Confirm that the control panel seat is installed to proper position of the cabinet. Pay attention on the adjusting of the gap between the control panel seat and the cabinet.

## The cabinet and outer tub component

### 1) Method of disassembling

- A. Loosen the two motor bolt unit to dismantle the motor. To adjust the tension of the belt, loosen the bolts and move the motor left and right.
- B. Loosen the four fastening screws to dismantle the delivery shield.
- C. Loosen the three fastening bolts to dismantle the drain motor.
- D. In dismantling the drain valve, first loosen the screws, then rotate combination part with the drain hose, overflow hose and outer tub slowly to make it loose. Then dismantle the drain valve.
- E. In dismantling the inner tub, first take off the outer tub cover, then dismantle the pulsator, finally dismantle the inner tub. Handle with care when taking the inner tub off from the outer tub.

### 2) Points of attention in assembly

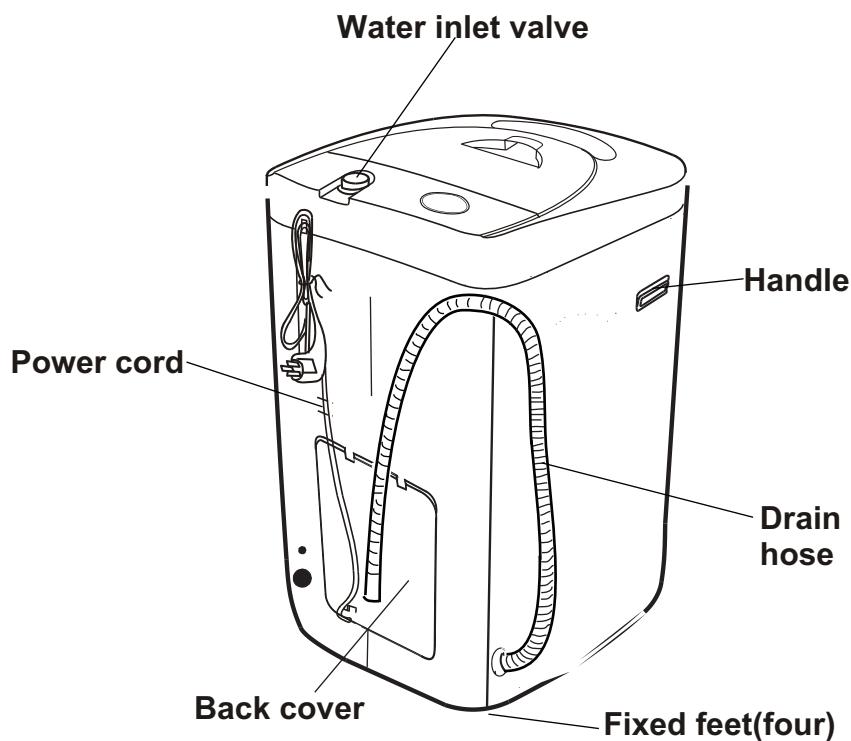
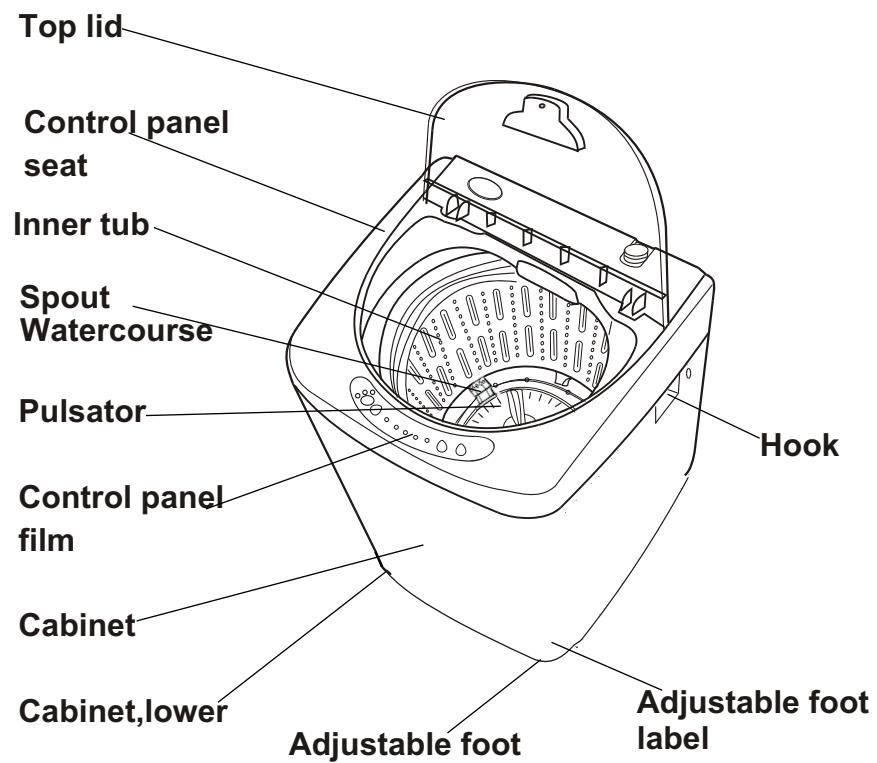
- In installation of the drain valve, please smear a piece of 801 glue at the connection part between the drain valve and outer tub and between the overflow hose and drain hose to guarantee that the drain valve will not leak.
- In fastening the screws, make it tight without sliding.
- Take care not to scratch the cabinet and influence the appearance of the Machine.

# Service Manual

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## Chapt 5 PARTS AND FUNTIONS



**Chapt 6 MAINTENANCE SERVICE AND TROUBLE SHOOTING****6-1.Trouble alarm and solve method**

Phenomenon	Reason	How to solve
In wash/rinse/spin, the machine stops (The "wash" "rinse" "spin" indicator flash quickly)	● The top lid is not closed.	● Close the top lid.
The draining does not work, or the speed of draining is too slow (the indicators of "rinse" "spin" flash)	● Is the drain hose blocked by foreign material?	● Clean the foreign material. Open and close the top lid once.
The safety switch acts. The spinning can not work (the indicators of "wash" "rinse" flash quickly)	● Are the laundries put slantingly ● Is the machine slanting?	● Re-order the laundries. Close the top lid. ● Level the machine in right position. Open and close the top lid once.
The program pauses after about 8 minutes of water inlet (the indicators of "wash" "spin" flash quickly)	● The water faucet is not open. ● The water inlet valve is blocked. ● The water pressure is too low and the current is too small.	● Open the water faucet. Push the "Start/Pause" button. ● Clean the water inlet valve. Push the "Start/Pause" button. ● Wait for the normal water pressure before use.
The machine does not act.	● Is there power failure? ● Is the power plug loose?	● Use it when the power is on. Insert the power plug tightly.
There's abnormal sound inside the machine.	● Is the machine slanting? ● Are the laundries slanting in spinning?	● Level the machine properly. ● Re-order the laundries.
The water faucet leaks.	● Is the jointer screw of the water inlet hose is loose or twisted awry?	● Fasten the jointer screw properly.

## 6-2.Test program(test without water)

Push and hold the "CYCLE" and "start/pause" buttons, then push down the power switch to enter Test A program. Push the "CYCLE" to select Test B and Test C programs.

Testname	Test content	Selection indicator	
		Display before running	Display during running
Test A	The buzzer rings intermittently six times (0.4s connected, 0.8s shutoff). The program indicator flashes six times. The power is switched off automatically after finishing.	● ○ ○ ○ ○	● ★ ★ ★ ★
Test B	It will perform 2 minutes washing even without water (during running, you can change the current selection)Remarks: the water level switch is invalid. The power is switched off automatically after finishing.	● ● ○ ● ●	● ● ★ ● ●
Test C	2 minutes spinningWhen it detects abnormal conditions such as imbalance spinning, or the top lid is open, it will alarm. Open the top lid then close it to resume normal operation. The power is switched off automatically after finishing.	● ● ● ● ○	● ● ● ● ★ When in alarm ● ● ★ ★ ★ ● ● ★ ★ ★

**Remarks:**the indicators in the list are (in turn): quick, wash, rinse, spin.

**indicator off** ●

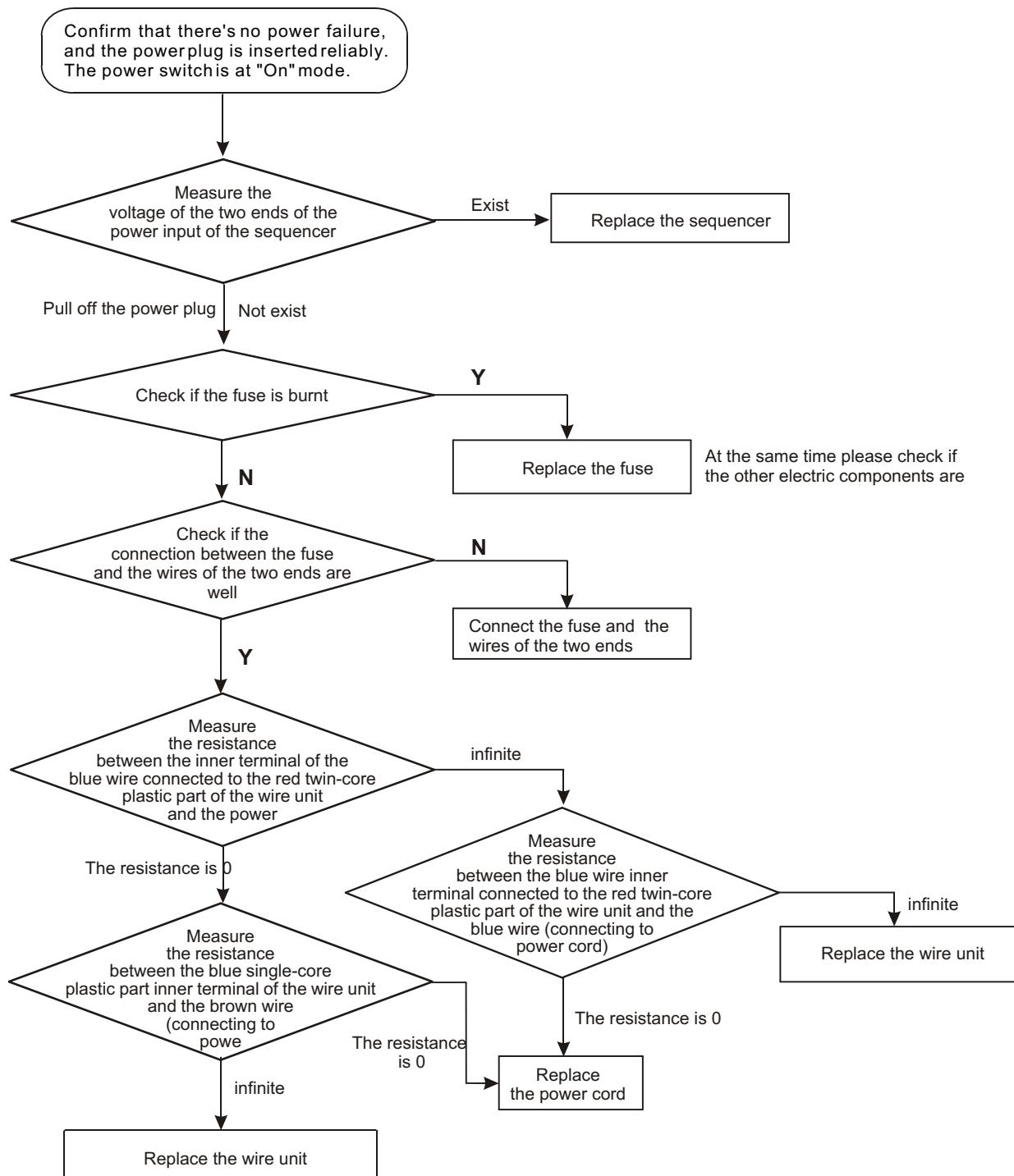
**indicator on** ○

**indicator flash** ★

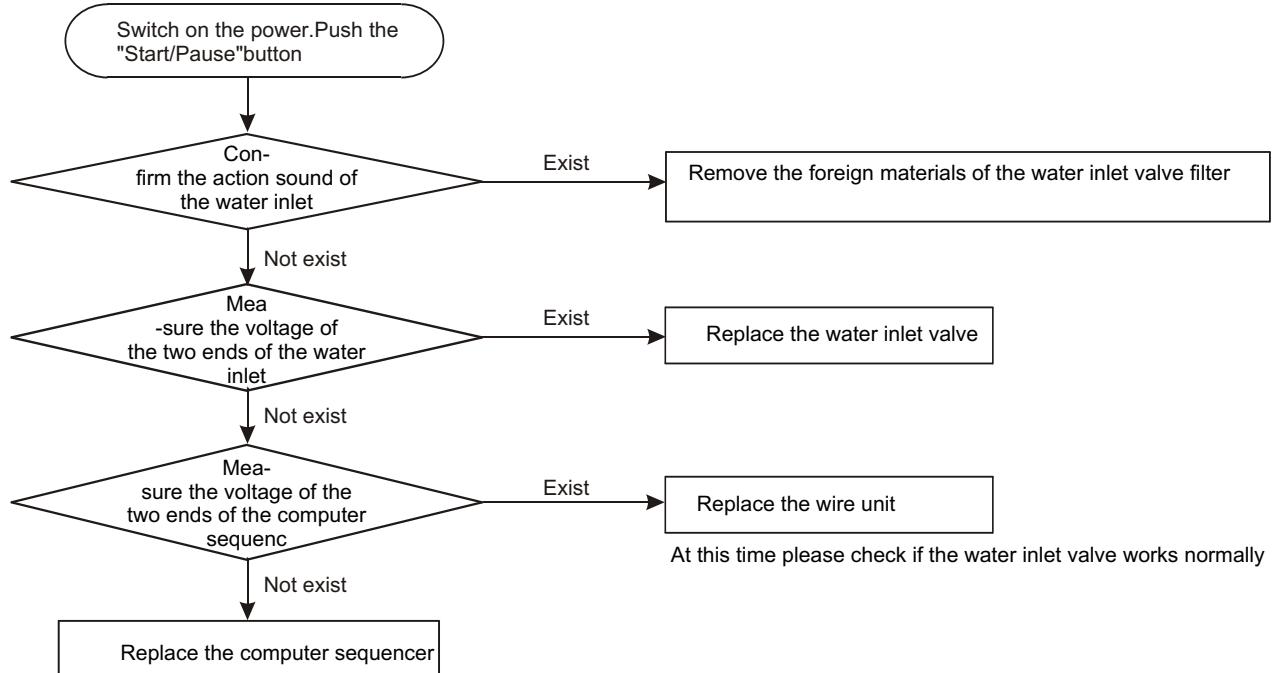
## 6-3 Trouble-shooting charts

If you replace the computer sequencer without checking the other components carefully, the computer sequencer may be damaged again. Therefore, please first check if the other components working normally before replacing the sequencer in

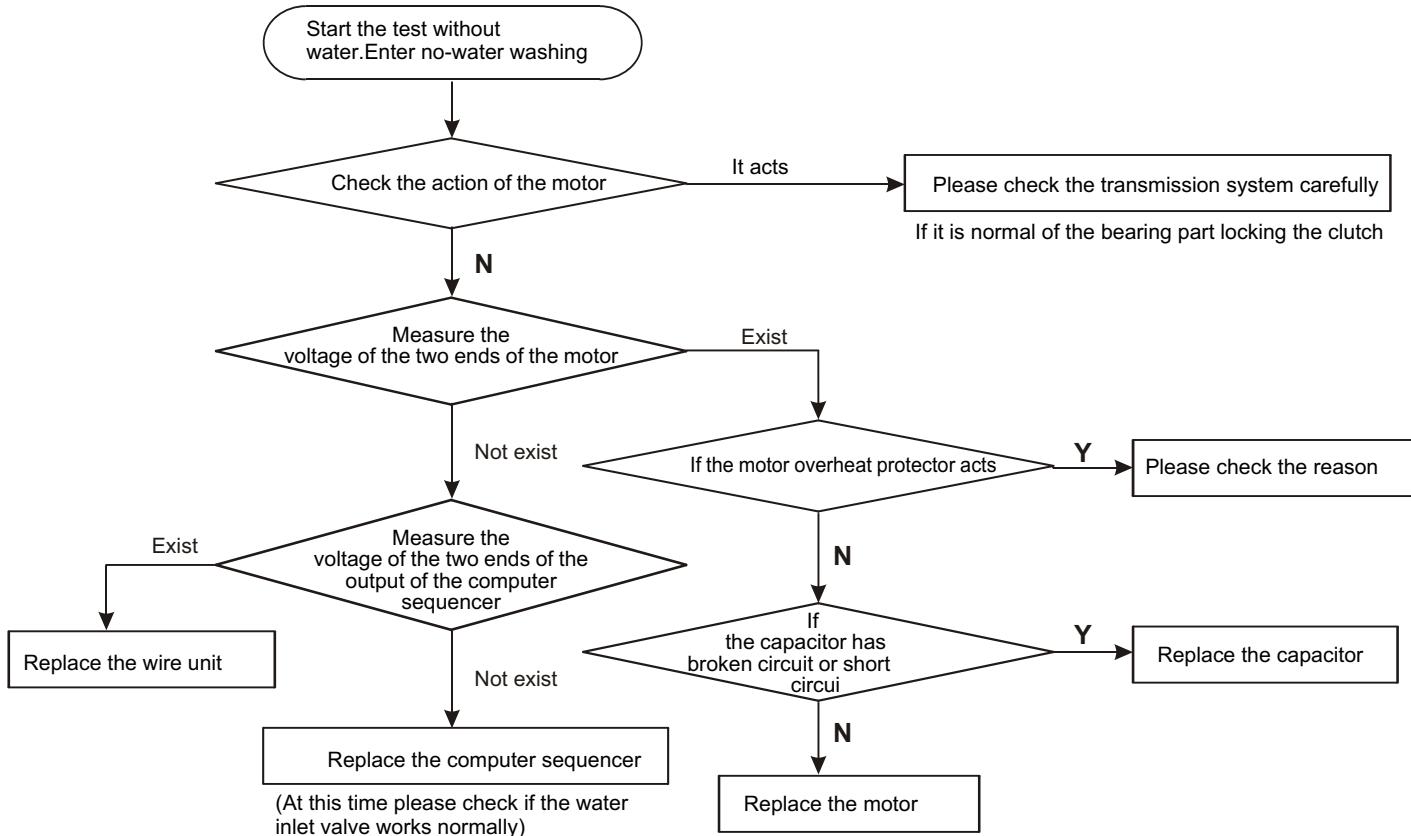
### 6-3-1 No action(The indicator is off)



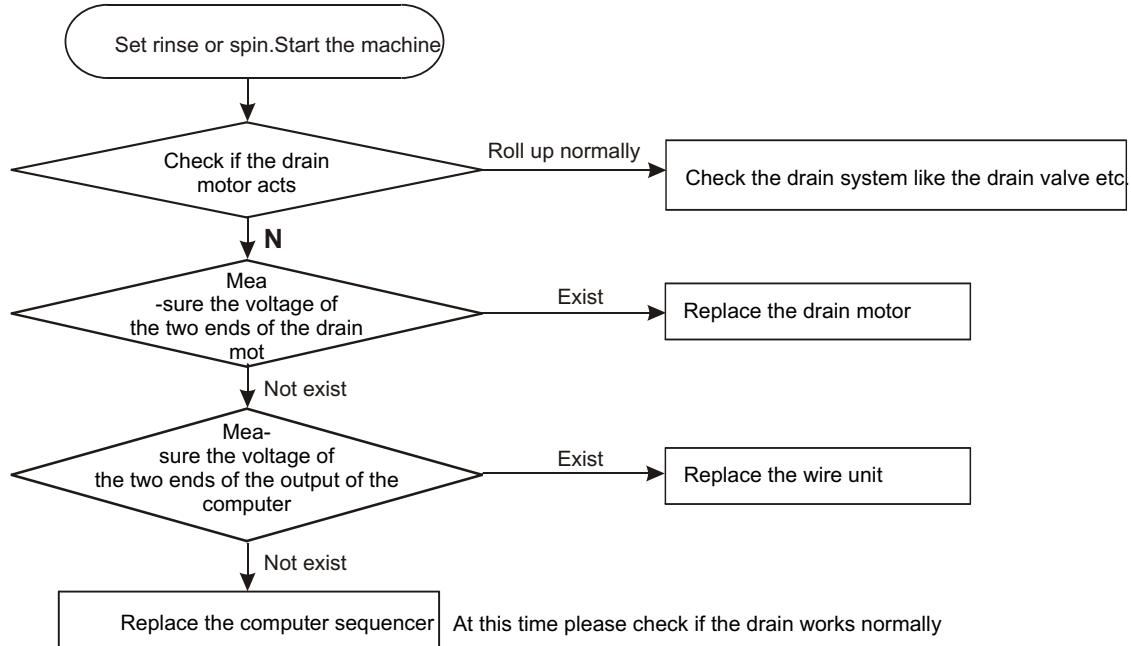
## 6-3-2 No water filling



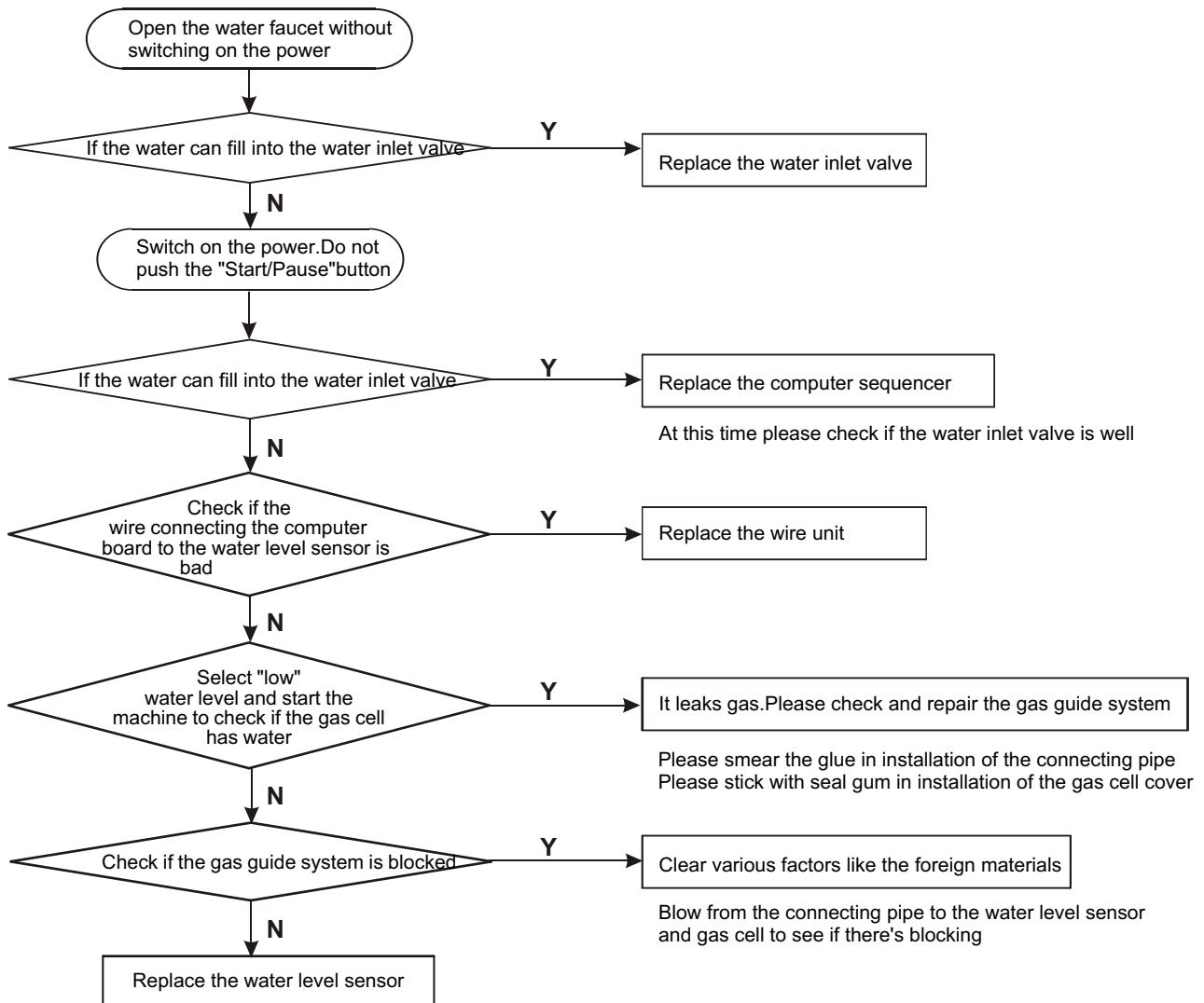
## 6-3-3 No rotation in washing(or rotate to one direction)



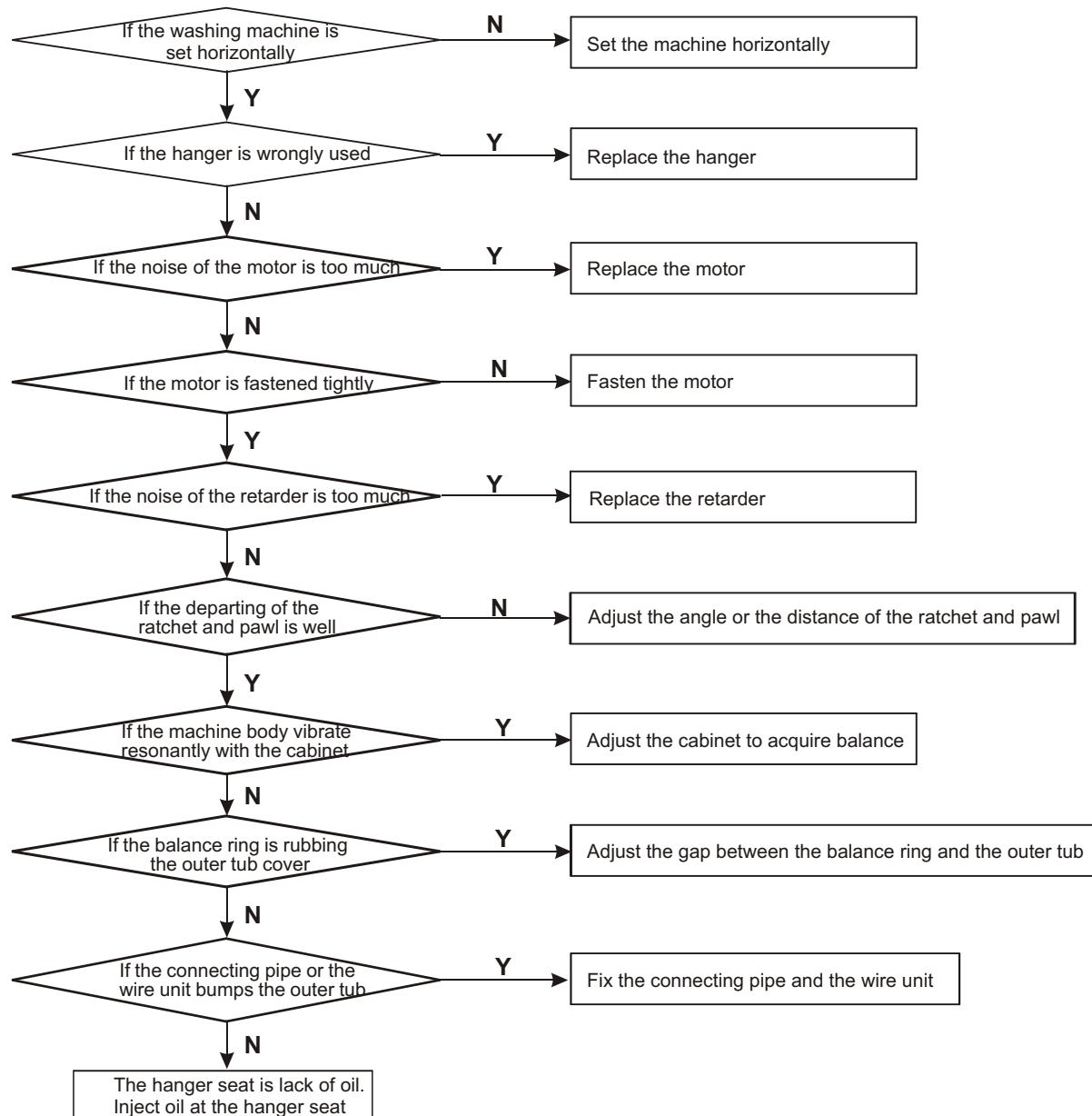
## 6-3-4 No draining



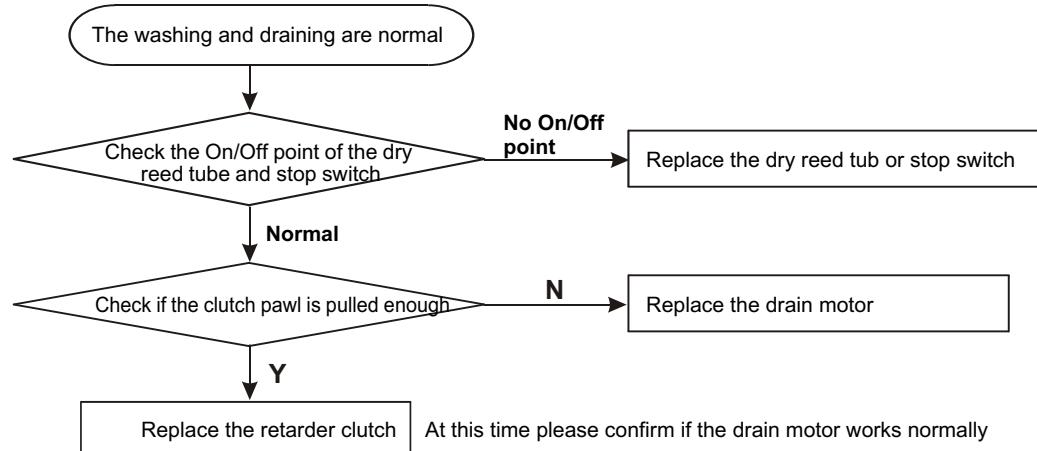
## 6-3-5 Keep filling water



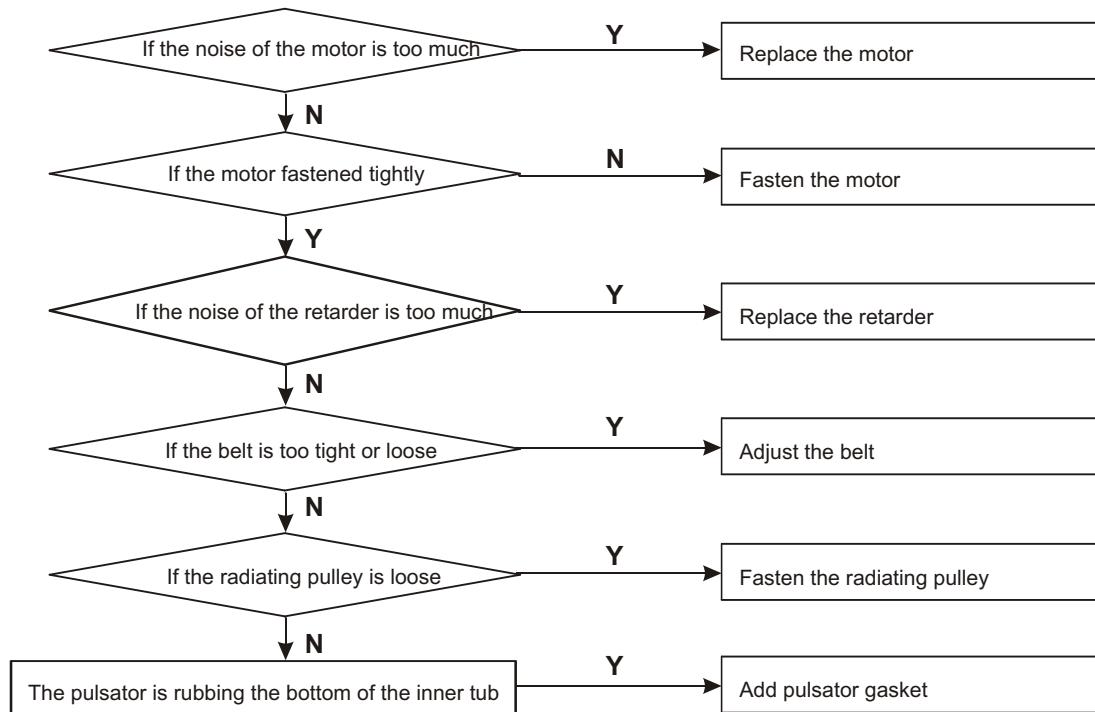
## 6-3-6 Too much spinning noise



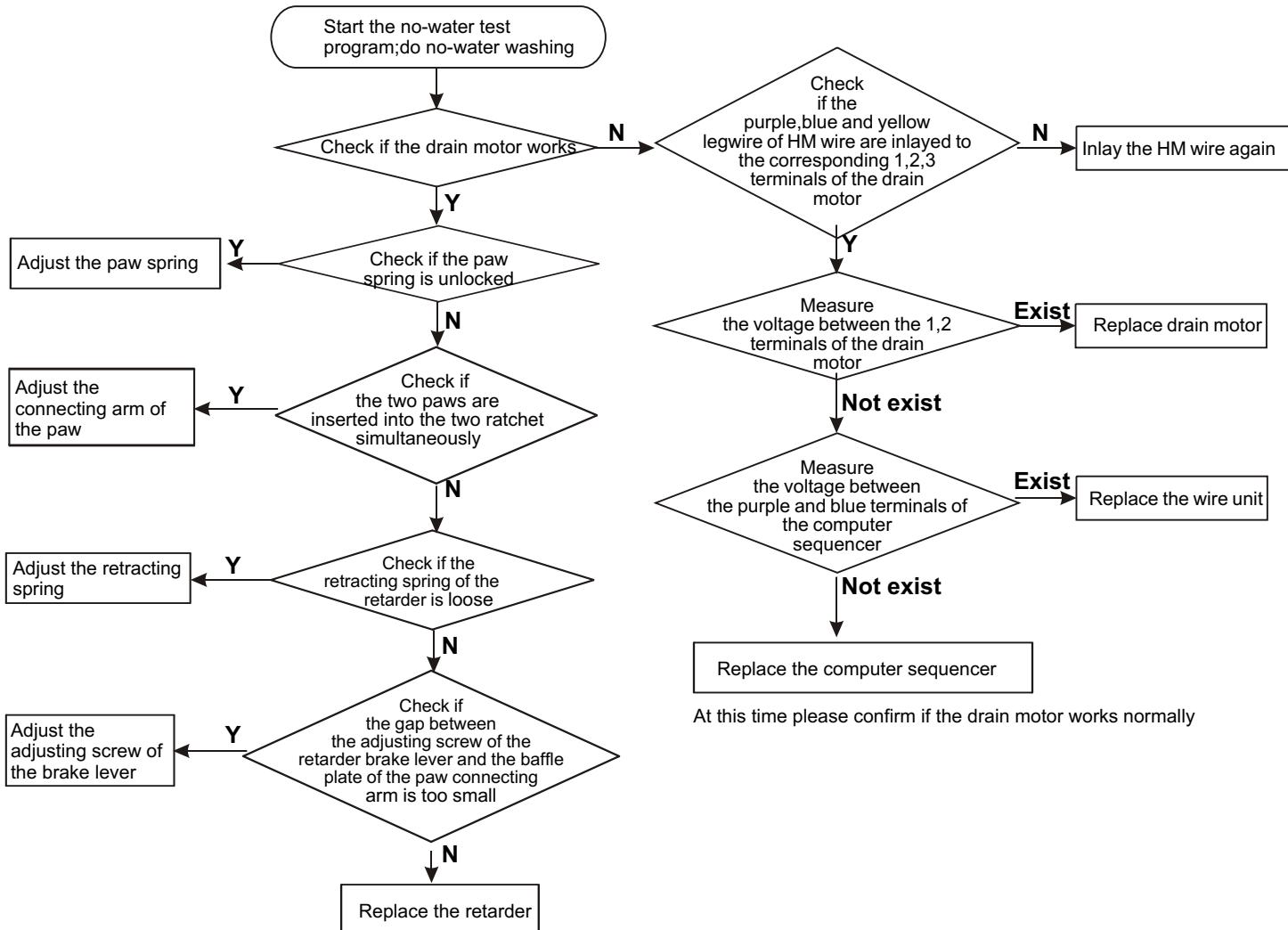
## 6-3-7 No spinning



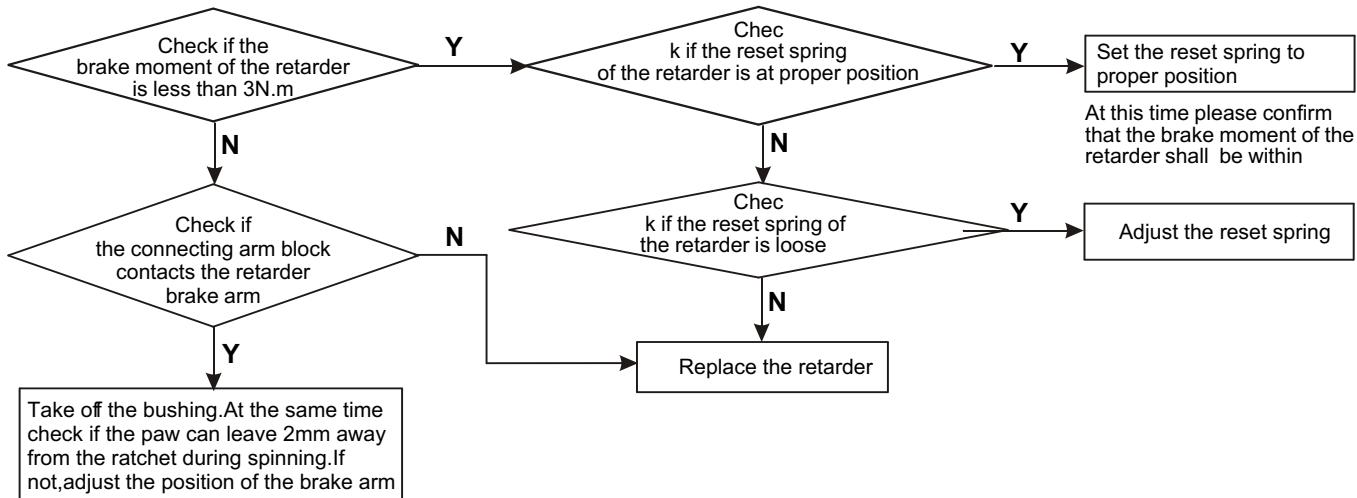
## 6-3-8 Too much noise in washing



## 6-3-9 The tub rotates to one direction(in washing)



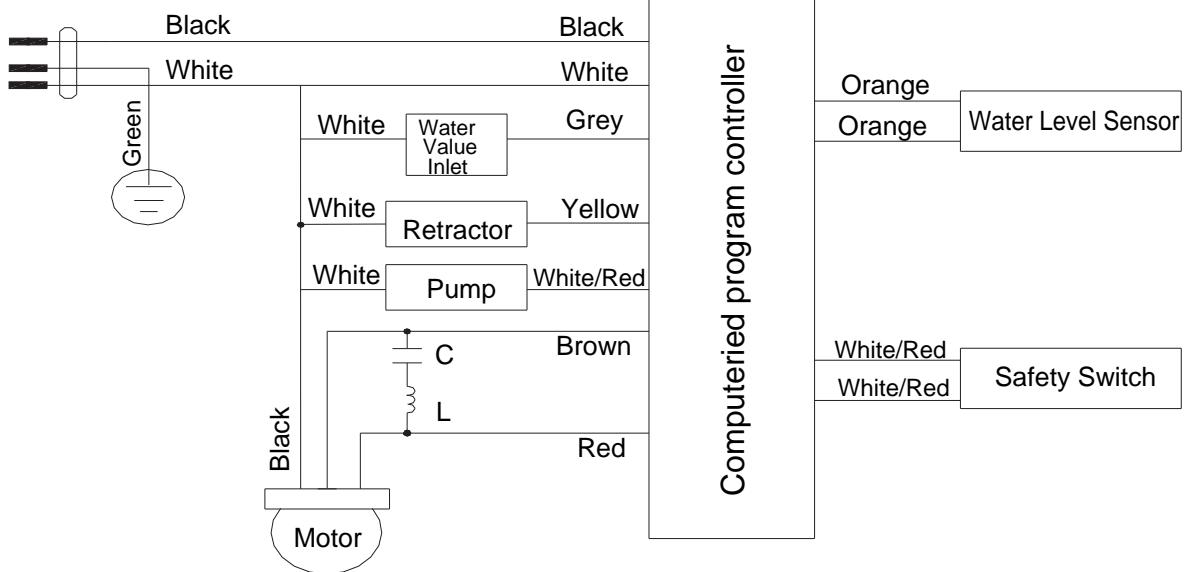
## 6-3-10 Time-out in brake



## Chapt7 WIRING DIAGRAM

The Actual Circuit Diagram

**The coilL is used to protect the circuit,please do not dismantle it**



Computerized program controller

# **Sincere Forever**

## **Haier Group**

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